Rec. zool. Surv. India: Vol. 120(3)/281–284, 2020
DOI: 10.26515/rzsi/v120/i3/2020/150700

ISSN (Online) : 2581-8686
ISSN (Print) : 0375-1511

First Record of the Brown Blotched Bengal Tree Frog (*Polypedates bengalensis*) from Odisha, India

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Abstract

The recently described Brown Blotched Bengal Tree frog, *Polypedates bengalensis,* is being reported for the first time from Odisha. This forms the second report of the species, after it was described from West Bengal, India. With the present report, the number of *Polypedates* species from Odisha increases to three species and the total number of amphibian diversity from Odisha comprises 28 species.

Keywords: Amphibia, Distributional Range, Diversity, Rhacophoridae

Introduction

The Brown Blotched Bengal Tree frog, *Polypedates bengalensis* Purkayastha *et al*. 2019, was recently described from Kharda (Khordanahala), South 24 Parganas district and Madhyamgram of North 24 Parganas district, southern West Bengal (Purkayastha *et al.*, 2019). The species is currently known only from the type locality in West Bengal nearer to Kolkata. The total number of amphibians from India is now 447 species (Dinesh *et al*, 2020), which includes 406 species of Anurans (frogs and toads). The tree frogs of the family Rhacophoridae which comprise about 102 species in India include the genus *Polypedates* Tschudi, 1838 (Dinesh *et al.*, 2020). At present, the genus *Polypedates* have 25 recognised species worldwide including *P. bengalensis,* with 12 species known from India (Frost, 2020). The genus is represented by two species, viz., *P. maculatus* (Gray, 1830) and *P. teraiensis* (Boulenger, 1906), in Odisha (Mohapatra *et al.,* 2017). Recently the first author happened to collect one female specimen from Bhubaneswar, Odisha which was later diagnosed as *P. bengalensis.* With the report of this species from Odisha, the total number of amphibians recorded from the state now stands at 28 species and five species in the family Rhacophoridae, after considering the synonymy suggested in Mirza *et al.* (2019).

Material and Methods

On 12th January, 2020 the first author collected one female specimen of this species from Balaramvihar, Nuagaon, Bhubaneshwar, Khurda district, Odisha (20.220° N and 85.842° E) from anthropogenic habitat (found hiding in a book shelf about 7 feet above the ground) (Map 1). This locality has stagnant water bodies and agricultural lands in the surroundings. The frog was photographed *in situ* (Figure 1). The specimen was then anesthetized and preserved in 70% alcohol. For further morpho-taxonomic studies it was deposited to Zoological Survey of India and was registered as ZSI A- 14586. We followed the methodology of Deuti *et al.* (2014) for taking meristic and mensural data. The specimen was observed under a magnanoscope and mensural data was recorded with a Mitutoyo™ digital caliper to the nearest 0.01 mm. The species was identified based on Purkayastha *et al.* (2019).

Results

Following characters were observed in the collected specimen (ZSI A-14586): Snout to Vent Length (SVL): 66.2 mm; skin on head co-ossified to the cranium; tympanum large; more than four-fifth the size of eye; tympanum separated from eye by a small gap; a straight

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Article Received on: 06.02.2020 Accepted on: 10.04.2020

Map 1. Distribution of *Polypedates bengalensis.* (Source: Googlemap.com).

Figure 1. *Polypedates bengalensis,* 66.2 mm SVL in life from Odisha, India (ZSI A- 14586).

and downward supra-tympanic fold runs from behind the eyes to angle of jaws. Interorbital space – flat, its length wider than upper eyelid nostrils small, laterally oriented and closer to the tip of the snout than to eye.

Forelimb relatively – long, no dermal fold on fore arm, inner and outer metacarpal tubercles present, fingers lack webbing, relative lengths of fingers 4>3>2>1, tips of fingers with prominent disks. Hind limb long; shank longer than thigh; distinct subarticular tubercles on toes; a large spade-shaped outer metatarsal tubercle and an inner metatarsal tubercle, present; tibio-tarsal articulation reaches between eye and nostril; toes webbed; disks prominent; relative lengths of toes 4>5>3>2>1.

Table 1. Mensural data of ZSI A-14586

Characters	Measurements (in mm)	Ratios
Snout to Vent Length (SVL)	66.24	
Head Length (HL)	23.60	SVL:HL (1.0:0.35)
Head Width (HW)	21.63	SVL:HW (1.0:0.32)
Head Depth (HD)	13.04	SVL:HD (1.0:0.19)
Inter-Orbital space (IO)	7.37	SVL:IO (1.0:0.11)
Nostril-Snout tip distance (NS)	4.62	SVL:NS (1.0:0.07)
Eye-Nostril distance (EN)	6.45	SVL:EN (1.0:0.09)
Snout Length (SL)	10.71	SVL:SL (1.0:0.16)
Eye Diameter (ED)	6.57	SVL:ED (1.0:0.10)
Tympanum Diameter (TD)	5.41	SVL:TD (1.0:0.08)
Tympanum-Eye distance (TE)	2.32	SVL:TE (1.0:0.03)
Fore-Limb Length (FLL)	38.82	SVL: FLL (1.0:0.58)
Thigh Length (TL)	28.43	SVL: TL (1.0:0.43)
Shank Length (ShL)	30.65	SVL: ShL (1.0:0.46)
Foot Length (FL)	40.08	SVL:FL (1.0:0.60)

Table 2. Comparison of specimen of Odisha with the holotype

Sl. No.	Ratios	Holotype (West Bengal) Mature male	ZSI A-14586 (Odisha) Female
1.	SVL/HW	3.1	3.06
2.	HW/HL	0.9	0.91
3.	HD/HL	0.7	0.55
4.	NS/EN	0.6	0.71
5.	FL/SVL	0.5	0.58
6.	TL/ShL	0.9	0.93

Dorsum – smooth, lacking tubercles, surfaces of forelimbs and hind limbs smooth. Ventral surfaces of fore limbs smooth. Ventral surface of body granular, with enlarged tubercles present in the abdominal region. Ventral surface of thigh granulated. Shank and foot smooth. The measurements and ratios in respect to snout-vent length tally with that of Purkayastha *et al.* (2019).

Colour yellowish brown dorsally, creamish ventrally. A series of 9 dark brown blotches extend laterally from behind the eye to the vent, blotches vary in shape, mostly elongated. Three rows of blotches over middle of body, the largest at the centre. Two irregularly triangular shaped blotches in the interorbital region. A dark brown streak runs from the nostril to the angle of jaws. Tympanum dark brown; upper lip cream in colour; back of thigh with brownish blotches (Table 1&2).

Discussion

The tree frog family Rhacophoridae is supposedly represented by six species under four genera, viz., *Chirixalus* Boulenger, 1893, *Philautus* Gistel, 1848, *Raorchestes* Biju *et al.* (2010) and *Polypedatus* Tschudi, 1838, in Odisha (Mohapatra *et al.,* 2017). Dutta *et al.* (2009) have reported *Chirixalus simus* Annandale, 1915 from various localities of Odisha as *Chiromantis simus*. *Philautus sanctisilvaticus* Das & Chanda (1997), recorded from Koraput district, Odisha (Mohapatra *et al.,* 2017) is now treated under the genus *Raorchestes,* as *R. sanctisilvaticus* (Das & Chanda, 1997) (Mirza *et al.,* 2019). At the same time, *Philautus similipalensis* Dutta (2003) described from Similipal Biosphere Reserve (Dutta, 2003) and *Raorchestes terebrans* (Das & Chanda, 1998) recorded from Koraput and Mahendragiri (Gajapati dist.) (Mohapatra *et al.,* 2017), are now relegated to synonymy of *R. sanctisilvaticus* (Das & Chanda, 1997) (Mirza *et al.,* 2019). Among the two *Polypedatus* species recorded from Odisha *P. maculatus* (Gray, 1883) is widely distributed, while *P. teraiensis* (Dubois, 1987) has a patchy distribution (Dutta *et al.*, 2009; Mohapatra *et al.,* 2017). Hence, only four species under three genera of tree frogs are now recognized from Odisha. The report of *P. bengalensis,* the third species in the genus and fifth tree frog from Odisha, forms its first record from the state. With the addition of this species and after deduction of two species treated as junior synonyms, as discussed above, the total amphibian diversity of Odisha now stands at 28 species.

We believe that the earlier workers might have confused this species with *P. maculatus,* a widely distributed species in Odisha, because both having similar colourations to some extent. However *P. maculatus* differs from *P. bengalensis* in having free skin on forehead (not co-ossified to the cranium), while *P. teraiensis* differs in having three palmer tubercles (two in *P. bengalensis*) (Purkayastha *et al.*, 2019). However, the differences in meristic ratios (Table 2) may be attributed to our female specimen; whereas the original description did not include female characteristics. The record of *P. bengalensis* from Bhubaneswar, Odisha is indeed interesting and extends it distributional range further southwestward by about 320 km in air distance. The new locality, Bhubaneswar, has quite similar climate and rainfall as nearby places of Kolkata and other areas around southern West Bengal. Further keen studies on this anuran diversity may extend its distributional range in other parts of Odisha.

Acknowledgments

We are grateful to Dr. Kailash Chandra, Director, Zoological Survey of India for providing facilities. We thank Mr. Biju Mukherjee for photographing the specimen.

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